

## On the Feeding Habits of Four Species of Adult Dolichopodidae (Diptera)

By O. M. WHITE\*

Colyer and Hammond (1951), in *Flies of the British Isles*, described the feeding habits of the Dolichopodidae generally, and of *Sciapus maritimus* Becker in particular. The following is an attempt to describe those of four species, and is based on observations of adults in my garden (in one case, at a short distance from there) at Stapleford, Notts. during 1974 and 1975.

I watched a female *Dolichopus griseipennis* Stannius drop the food it was masticating (19.viii.74), and saw that this was a fragment of some whitish substance of which many more were on the surface of the maturing compost that formed the immediate part of this arena. The fly retrieved this fragment which it had probably dropped in mistake, resumed feeding in the head-up position for a minute or so, and finally discarded the residue then hardly 0.1 mm. in length and apparently unidentifiable. Almost a year later I noticed several aphid exuviae falling on to the same spot (8.vii.75), and when examining the lateral parts of their abdominal segments, I realised that these were apparently similar to the fragment partly eaten by *griseipennis*. Another female of the same species fed on the surface of a slightly moist, decaying leaf (20.viii.74), in the head-down attitude.

During some 20 hours occupied in watching both sexes of *griseipennis* (30.vii to 20.viii.74), I saw no indication of predatory behaviour on the part of the half-dozen or so individuals which were usually present, although frequent sallies were made by them to overflying or perching insects of any size up to that of Vespidae (Hymenoptera) and on one occasion to my hand, producing a surprisingly strong impact (31.vii.74).

The intruder would always leave after such a sally, and *griseipennis* would then return to its perch: in the instance of my hand, *griseipennis* itself left, to occupy a new perch. I think such sallies were probably territorial and/or simulatory in function. Small, live pedestrians, such as Collembola, were always ignored, even when at a centimetre or so from *griseipennis*, and this occurred in both sexes of the latter.

A female *D. trivialis* Haliday fed at aphid excretions which were in their sticky (second) stage (21.vi.75), moving from one such spot to another on a leaf of meadow-sweet (*Filipendula ulmaria*), and a female *D. unguilatus* Linn. in a nearby damp site also fed at aphid excretions (12.vii.75), on a leaf of reed-grass (*Phalaris arundinacea*). Scrapings from similar spots of aphid excreta contained many, apparently viable micro-organisms.

An unidentified female *Dolichopus* that entered the house and perched on an upturned cup (9.vii.75), accepted undiluted honey, placed close to the fly's front tarsi. The fly reacted by making short walking movements and within a few seconds its front tarsi were on the honey and it had inserted its mouthparts rather deeply into the latter. It withdrew almost at once, adopting

\* 6, Northwood Street, Stapleford, Nottingham, NG9 8GH.

a head-up attitude, but in doing so, the fly had drawn out a thread of honey attached to its mouthparts and was at first unable to free itself. After making some movements with its mouthparts, *Dolichopus* ejected a tiny bubble of honey and succeeded in freeing itself, after which it lowered its foreparts, inserted the tips of the labella into the honey and commenced to feed in the usual head-down attitude. The insect showed no difficulty in detaching its mouthparts and front tarsi from the honey before it moved to a second, similar droplet, at a distance of about a centimetre where it fed for a minute or so, after which it flew out of a window that I had carelessly left open.

A female *Chrysotus gramineus* Fallén that had perched on a leaf of meadow-sweet, captured a very small green, apparently immature collembolon (13.vi.75) by means of a quick flight to its intended prey on the opposite lobe of the same leaf, where *gramineus* instantly turned about and was then facing me in the head-up attitude, when I saw part of the collembolon projecting from the fly's labella. At this moment, both were easily captured, the fly releasing its prey which adhered to the glass tube I was using and appeared to be dead. Further instances of similar predation were then noticed on the upper surfaces of the leaves of broad bean plants (*Vicia faba*). I saw two dark-coloured Collembola, the second of which I estimated to be about twice the size of the first, being captured by one individual *Chrysotus* in about three minutes. I suspect that the first of these prey might have been incompletely masticated when the second one was captured.

I took several Collembola directly from the broad bean foliage where *Chrysotus* hunted. Mr. Walley, to whom I sent specimens, kindly informed me that three dark specimens were *Smynturus pallipes* and two pale ones, *S. aureus* and *S. luteus*, also that he thought the foliage would be safe, which later inspections confirmed. *Chrysotus* selected the darkest examples (*pallipes*) for prey, with the exception of the first instance noted above.

On the first 25 broad bean plants the numbers of Collembola fell from 1,264 individuals to 480 (including all species) from 20.vi.75 to 28.vi.75, while *Chrysotus* increased from four individuals to ten during the same period. After the supply of springtails had so decreased, only one *Chrysotus* remained on the broad bean plants, and apart from a single *gramineus* which hunted, apparently without success among the border plants, I was unable to find any further specimens in the garden. *C. gramineus* actively avoided reddish-coloured mites which I believe were Tetranychidae (Acarina). One *Chrysotus* which made a strike upon a small parasitic hymenopteron, apparently discovered its mistake when it made contact with its intended prey, because it instantly flew onwards. A male *gramineus* was itself captured by a female Empidid, *Tachydromia minuta* Meigen (Diptera).

Only females are recorded here as I was unable to find any males which were feeding. The mouthparts of male *gramineus*

are more slender than those parts in the female, but they appear to be functional. It would be interesting to know something about the feeding habits of the males.

I am very grateful to Mr. E. C. M. d'Assis Fonseca for generously allowing me the use of his manuscript tables of the British Dolichopodidae, for checking the critical species and helping with this note, and to Mr. G. Walley of the Natural History Museum, Wollaton Hall, Nottingham, for his determination of the Collembola.

## Current Literature

**Classification of the Acridomorph Insects** by W. M. Dirsh. 170 pp. with glossary and bibliography. 74 text figs. Published by E. W. Classey Ltd. £9.80 including postage.

The author notes the conservative nature of Acridologists, many of whom still use the obsolete and confusing taxonomy of the 19th century for the higher taxa. Often Mayr's hierarchic scale is not adhered to because the terms are undefined.

In 1962 the old Order Orthoptera was split into eleven Orders, Orthoptera being retained in a narrower sense, and all were placed in the Superorder, Orthopteroidea. Since then the author has revised this several times and in the present work he divides the Orthopteroidea = Orthoptera (*sensu constricta*) into ten Orders. The Eumastacoidea and Acridomorphaidea, each containing three Superfamilies, are the subject of this book.

The main characters used in classification are discussed, and the Orders are reviewed, with keys, to family level, under Diagnosis and Distribution.

For each family, one species of the type genus is illustrated by fine line drawings and details of genitalia.

While the revised taxonomy will doubtless provoke discussion, this is a soundly based and much needed revision. — E.H.W.

Also received, and only obtainable in Europe from E. W. Classey Ltd. of Farringdon, Oxon: —

**The Swallowtail Butterflies of East Africa (Lep.: Papilionidae)** by R. H. Carcasson, F.R.E.S., with b. & w. illustrations by the author. 30 pp., plus plates. Limp covers. £1.80.

A fine reprint of this important work.

**Geographic Variability in Speyeria (Lep.: Nymphalidae) with comments, records and description of a new sub-species** by A. H. Moeck. 48 pp. Paper Bound. £2.00.

In this reprint of a paper read to the Milwaukee Ent. Soc., 1975, the author recounts the findings and results of 30 trips covering 150,000 miles to 1,500 localities in the U.S.A. in the search for intermediate forms in the various species, subspecies-complexes of *Speyeria*, in an endeavour to show that each complex is probably a cline of a single species. — E.H.W.